

matter, both as regards text and cuts, forms a conspicuous feature of the work, which is thus practically an encyclopedia of ornithology. For those who know Dr. Coues's ability at giving the gist of a bird's history in a few happily worded sentences, it is unnecessary to say that a vast amount of information is compressed into the space of a few lines. To cite a few illustrations: About 700 words are devoted to the word Grouse and two cuts, one representing the Scotch Ptarmigan, the other the Dusky Grouse of western North America. The history and etymology of the word occupies about 100 words, followed by a definition of the characters of the sub-family Tetraoninae, with an enumeration of most of the species, under both their English and Latin names, with the principal synonyms of the former. In addition to this about 100 words are given to *Bonasa*, with a cut of our Ruffed Grouse; about the same to *Canace*, with a cut of the Canada Grouse; about 150 words are given to *Centrocercus*, with a cut of the Sage-Cook; under *Dendragapus*, this term is defined and a cross reference made to *Canace*; Ptarmigan receives about 200 words, with a cut of the Rock Ptarmigan, while nearly as much more is given under *Lagopus* with a cross reference to Ptarmigan; and so on for the other generic groups of the Tetraoninae. This in fact may be taken as a fair illustration of the scope and method of treatment of ornithological subjects, most of the higher groups, including all of the more prominent genera, receiving from 50 to 200 words each, with generally a cut illustrative of some typical species of the group.

The amount of toil and tact involved in such an undertaking, it is easy to see, is almost beyond estimate, while the utility of such work cannot readily be over-appreciated. That in all parts it is equally good, or wholly beyond criticism, is not to be expected, but a careful examination of the work leaves us with the impression that an endless amount of labor and care has been expended, greatly to the advantage of not only the layman but to the trained specialist, particularly in fields outside of his own province. As a work of reference 'The Century Dictionary' must for a long time easily lead all competitors, it standing quite alone as regards scope, completeness, and fullness of treatment. — J. A. A.

**Chapman on a Collection of Birds from British Columbia.\*** — The collection, of about a thousand specimens, on which this important paper is based, was made by Mr. Clark P. Streator between April 21 and Nov. 15, 1889, at several places in British Columbia and Washington. From June 16 to Sept. 3 he was in the comparatively dry country east of the Coast Range; the rest of the time he spent on or near the coast.

The paper opens with a brief description of the localities visited by Mr. Streator, together with a statement of the dates of his stay at each place, and then passes on to a discussion of the climatic regions in which they

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\* On a Collection of Birds made by Mr. Clark P. Streator in British Columbia, with Field Notes by the Collector. By Frank M. Chapman. — Bulletin of the American Museum of Natural History, New York City, Vol. III, No. 1, Article VII. Author's edition issued Oct. 8, 1890.

lie, and of the effects of these climates upon the differentiation and distribution of the birds now found there. Mr. Chapman defines the moist coast region as having its eastern boundary "clearly determined by the mountains of the Coast and Cascade Ranges," and as extending northwestward to Kodiak Island, Alaska, and goes on to say: "In the present condition of our knowledge the southern limits of this region can be determined with but slight approximation. The abrupt lines which restrict the climatal conditions of the northern, eastern, and western boundaries are wanting on the southern boundary, and we have here a more gradual transition from the coast area of heavy rainfall southward into Southern California. . . . On the Californian coast the southern limit of the northwest coast fauna may probably be drawn in the vicinity of Cape Mendocino, in Humboldt County, at about latitude  $40^{\circ} 30'$ , or near the annual isohyetal line of 38 in." In attempting to mark out a definite southern boundary of the 'Northwest Coast Region,' Mr. Chapman has run against the stumbling-block which lies in the path of everyone who tries to draw hard and fast lines that do not exist in nature. Such a dividing line must necessarily be purely arbitrary, for in reality there is no separation, one thing shades imperceptibly into the other. The change from the forms inhabiting the wet coast of British Columbia to their representatives that occur farther south, is a gradual one and keeps even pace with the change in climatic conditions. The farther south we go from Puget Sound the less strongly marked is the rich and deep coloring that characterizes the birds of that region. On the Oregon coast a difference already appears, in the region of Cape Mendocino it has become greater, about San Francisco the divergence from the typical forms is still wider, yet even here the affinity to the Northwest Coast races is very close. If, for the sake of convenience, we are to lay down imaginary boundaries where Nature has imposed no separation, it is probable that in the present case the line would have to be drawn somewhere between San Francisco and Santa Barbara. — not as far up the coast as Cape Mendocino.

Mr. Chapman further discusses the influence of the moist coast climate upon the differentiation of local races, and illustrates his remarks by a table of 31 characteristic coast forms contrasted with their representatives in the interior. In bringing about this differentiation he says: "heavy rainfall and humidity are primary factors, but the more immediate agents are the dense vegetation and clouded skies of a moist region which afford protection from the 'bleaching' rays of the sun." In other words it is simply a question of exposure to light, and the relative moisture of the atmosphere has nothing directly to do with the result. This is an assumption which may well be questioned.

Among other interesting things brought out by his study of these collections Mr. Chapman finds that species, which in the arid regions of the western United States are "differentiated from their Eastern allies, in several instances appear in British Columbia in a plumage which more nearly, if not exactly, resembles that of the Eastern form." Examples mentioned are *Chordeiles virginianus*, *Pooecetes gramineus* and *Spizella socialis*. It

may be possible that in these cases approximately similar climatic conditions have, as Mr. Chapman states, resulted in the development of similar characters, but is it not more probable that the likeness is due, at least in part, to a recent genetic connection with the true Eastern forms which in their northwestern extension across the continent exist not so very far to the northward of British Columbia. There are no impassible physical barriers to prevent such an origin of the birds in question, and may not a connection be to some extent still kept up by the occasional infusion of fresh blood of the Eastern form by means of an annual migration from the northward?

The author also mentions one or two instances where, among series fairly characteristic of the interior or of the coast forms, individuals occur showing strongly marked characters of an Eastern race. Why might not this too be the result of interbreeding with a stray migrant from the northward? It is generally believed that the bulk of the 'Eastern' birds inhabiting the Mackenzie Basin and the interior of Alaska migrate southeasterly, keeping to the eastward of the Rocky Mountains. The occurrence of stragglers of various species southward along the Pacific coast makes it seem not unreasonable that there should be a similar, though very limited, migration through the valleys of the interior, trifling, perhaps, in numbers, yet amply sufficient to account for such facts as these.

Following the introduction comes a formal list in which 160 species are considered in detail. "In every instance specimens have been received unless a statement is made to the contrary." Mr. Streater's field notes are usually brief, but of course are of much interest, coming from regions of which we have so little definite knowledge. Mr. Chapman adds in many cases important, and sometimes extended, technical notes bearing chiefly upon questions of geographical variation.

The paper ends with a table "giving the number of specimens of each species contained in Mr. Streater's collection, and also the localities at which they were obtained," thus showing exactly upon what material every conclusion of the author's is based. It would be a most desirable thing if other writers would follow this example of Mr. Chapman's. The table is a fitting conclusion to an excellent piece of work, one that on more grounds than one takes rank as an important contribution to ornithology.—C. F. B.

**Hagerup and Chamberlain's Birds of Greenland.\***—This book, prepared by Mr. Chamberlain from material furnished by Mr. Hagerup, consists of two parts. The first, an annotated list of the 'Birds of Ivigtut,' is based upon a former paper by Mr. Hagerup published in the 'The Auk' two years ago (Vol. VI, pp. 211-218, 291-297). This has been revised and corrected, and includes the results of experience gained by Mr. Hagerup

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\*The | Birds of Greenland. | By Andreas T. Hagerup. | Translated from the Danish | by | Fridmann B. Arngrimson. | Edited by Montague Chamberlain. | Boston: | Little, Brown, and Company. | 1891.—3<sup>d</sup>, pp. 62.